A Detailed Study of the Coherent Modes of Round Beams,[*]

M. A. FURMAN, Lawrence Berkeley Laboratory, J. R. EDEN, U. of Washington, Seattle and S. KRISHNAGOPAL, Center for Advanced Technology, Indore, India — We look at the coherent quadrupole modes of zero-length bunches in a colliding ring, and compare the results of an analytic approach ("moment tracking") with those form multiparticle simulations which do not assume the gaussian approximation in the computation of the beam-beam force. We focus in particular on the effects introduced by the gaussian force approximation on round beams. One of these effects is an interesting long-time transient, in which the flip-flop mode competes with a higher-period fixed point. We also present a comparison with the linear-force model.

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